Message

From: Andy McGehee [amcgehee@synergywms.com]
Sent: 12/9/2020 7:19:51 PM
To: Watson, Marion [Watson.Marion@epa.gov]; Lusky, Katy [Lusky.Kathleen@epa.gov]; Vogel, Jennifer [Vogel.Jennifer@epa.gov]
CC: Jim Christiansen [jchristi@cecenv.com]; Worley, Gregg [Worley.Gregg@epa.gov]; McNeal, Dave [Mcneal.Dave@epa.gov]; Davis, Amber [Davis.Amber@epa.gov]
Subject: Re: WORK-IN-PROGRESS - RE: Synergy Solutions Determination Request

Good afternoon Tracy,

I figured I would respond to your original email RAI to try and stay organized! ;)
Please see below the answers I have so far. As I mentioned in our other emails and discussions we are working to get an updated Material / Energy Balance Flow Diagram put together for you on the entire process.
If you have any questions or would like to discuss any of this information please feel free to contact me via email or phone (205) 784-7655.

GASIFIER INFORMATION

1. What is the normal operation intended design operating temperature, (1200 to 1600 F)
residence time (120 minutes) and
O_2 concentrations (~40% substoichiometric O_2 concentrations ~ are maintained within the gasifier proper by PID controlled injectors. Combustion of the feedstock in the bed of the gasifier never occurs. (can be ranges) for the gasifier (item ~~10~~ 12 in the PFD).
At normal operation, is assist fuel necessary for the gasifier? Assist fuel is not required at normal steady state operation. Assist fuel is used for heat up burners and is only required during start up and typically takes 120 Minutes until the heat generation process is self sustaining using the syngas produced from the gasified feedstock. Feedstock process flow is controlled during start up heating to coincide with appropriate gasification temps. No feedstock is combusted or consumed during start up.

THERMAL OXIDIZER INFORMATION

2. What is the normal operation intended design operating temperature, (~1800°F managed by PID controlled air injectors for optimal temp/combustion/oxidization/pollution control of Syngas),
residence time (1.2 to 2.0 seconds), and
O_2 concentrations (~12% dependent on maintaining optimized feedback parameter control) (can be ranges) for the oxidizer (item 14 in the PFD)?
At normal operation, is assist fuel necessary for the oxidizer? No. Assist fuel is only utilized during start up of the gasifier (see answer #1)

ROTARY DRUM DRYER INFORMATION

3. What is the normal operation intended design operating temperature (~600°F managed by PID controllers for optimal moisture content control of the PBF),
residence time (10 to 15 mins), and
O_2 concentrations (~20% depending on optimized moisture content for the process by PID control) (can be ranges) for the drum dryer (item 4 in the PFD)?

At normal operation, is assist fuel necessary for the drum dryer? No. Assist fuel is only utilized during start up of the gasifier (see answer #1)

COMPLETE MATERIAL & ENERGY BALANCE

4. Are you able to provide a material and energy balance for the process? *Work in progress. Will provide ASAP*

BIO-CHAR, SYNGAS & EMISSIONS TOPICS

5. Are you able to provide some data/analyses (representative of normal operation) to support the characterization of the char produced by the process(HHV, compositions, etc...)? We have data / analysis on biochar produced from other feedstocks that have been run through our specific type gasifier but we have not been able to run our specific PBF through the gasifier to produce a specific biochar sample resultant from our PBF. We can provide more information on the biochar specification we intend to meet if necessary / helpful?

6. Are you able to provide some data/analyses (representative of normal operation) to support the characterization of the syn-gas produced by the process (HHV, compositions, etc...)? (Same as above) We have data / analysis from manufacturer on other feedstocks but not our specific PBF.

7. Has emissions testing been performed for the stack? If so, for what pollutants? (Same as above) We have stack emissions data / analysis from gasifier manufacturer on other feedstocks but not our specific PBF.

We would like to provide specific results for questions #5, #6 and #7 above that are resultant from running our specific PBF through our gasifier.
Is there any way we could be allowed to run our gasifier with our specific PBF on a limited basis (specified duration and amount of feedstock) to be able to gather data and provide answers for these questions? If there are other ways we could provide the answers without running the gasifier using our PBF, please advise?

Please let us know if you have any questions or need to discuss any of these results. I will get the Material and Energy Balance info to you ASAP.

Best regards,
Andy

> On Nov 10, 2020, at 11:24 AM, Watson, Marion <Watson.Marion@epa.gov> wrote:
>
> Hi Andy,
>
> I wanted to let you know that I am beginning to work on this project and I look forward to working with you! ☺

Initially, I do have some questions where answers to these questions may assist us in the determination:

1. What is the normal operation intended design operating temperature, residence time and O_2 concentrations (can be ranges) for the gasifier (item 10 in the PFD)? At normal operation, is assist fuel necessary for the gasifier?
2. What is the normal operation intended design operating temperature, residence time, and O_2 concentrations (can be ranges) for the oxidizer (item 14 in the PFD)? At normal operation, is assist fuel necessary for the oxidizer?
3. What is the normal operation intended design operating temperature, residence time, and O_2 concentrations (can be ranges) for the drum dryer (item 4 in the PFD)? At normal operation, is assist fuel necessary for the drum dryer?
4. Are you able to provide a material and energy balance for the process?
5. Are you able to provide some data/analyses (representative of normal operation) to support the characterization of the char produced by the process(HHV, compositions, etc...)?
6. Are you able to provide some data/analyses (representative of normal operation) to support the characterization of the syn-gas produced by the process (HHV, compositions, etc...)?
7. Has emissions testing been performed for the stack? If so, for what pollutants?

Thank you for your consideration,

Tracy

Marion "Tracy" Watson, P.E. | Environmental Engineer |
Mail Code: 9T25
Air and Radiation Division
Air Analysis and Support Branch
Communities and Air Toxics Section
U.S. Environmental Protection Agency, Region 4 | 61 Forsyth Street, SW | Atlanta, GA 30303
Voice: 404-562-8998 | Fax: 404-562-9059 | Email: watson.marion@epa.gov

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From: Andy McGehee <amcgehee@synergywms.com>
Sent: Monday, November 9, 2020 5:41 PM
To: Lusky, Katy <Lusky.Kathleen@epa.gov>; Watson, Marion <Watson.Marion@epa.gov>
Subject: Re: Synergy Solutions Determination Request

Katy, Tracy,

Thank you!
Tracy - Im new to this process (my first EPA submittal). Please let me know if there is anything you need from us. Im happy to hop on a call to discuss any questions you or any reviewer may have as you go through the review.

Regards,
Andy

> On Nov 9, 2020, at 2:42 PM, Lusky, Katy <Lusky.Kathleen@epa.gov> wrote:
>
> Thanks Andy. We will log this into our system and begin our review. Tracy Watson will be your primary technical contact for the review. (email is watson.marion@epa.gov).

Let me know if you have any questions as we go along.
Katy

Katy R. Lusky
Stationary Source Team Lead
Air Analysis and Support Branch
404-562-9130

From: Andy McGehee <amcgehee@synergywms.com>
Sent: Monday, November 9, 2020 12:53 PM
To: Lusky, Katy <Lusky.Kathleen@epa.gov>
Cc: Jim Christiansen <jchristi@cecenv.com>; Watson, Marion <Watson.Marion@epa.gov>; McNeal, Dave <Mcneal.Dave@epa.gov>; Matt Piell <mpiell@synergywms.com>; Harlow, David <harlow.david@epa.gov>
Subject: Synergy Solutions Determination Request

Dear Katy,

Please find attached a determination request regarding Synergy Solutions Gasifier Located in Cordele, GA.

Please let me know should you have any questions or require additional information.

Thank you and your staff in advance for your time in providing a determination regarding this submittal.

Best regards,
Andy McGehee
(205) 784-7655

<Process PFD.pdf>